# ANSWERS TO HAZ MAT TEASERS

## Unit 1: Suggested Answers

1. **The risk from** this incident would have to be rated as high. Factors to be considered in your risk evaluation are: the presence of a school and a nursing home nearby, and the service station's location in a residential area. The material involved is highly flammable, and a significant quantity of it has spilled onto the ground. In addition, gasoline can produce toxic effects even in relatively small quantities.

2. The primary route of entry of immediate concern for people downwind of the spill would be inhalation. For the driver of the tanker, the routes of concern would be inhalation (from the vapors produced by the material on the ground and on his clothes) and direct skin absorption.

3. Yes, there is a potential for a long-term exposure threat. Since the gasoline is soaking into the ground along the side of the street, the potential exists for groundwater contamination. We know that there are wells in the area of the spill, so this groundwater contamination could result in a long-term exposure threat due to the ingestion of gasoline-contaminated water. In addition, if the contaminated ground is not removed or treated, the affected soil could present another possible long-term exposure threat.

4. All transport media are involved in this case. The air is involved due to the volatilization of the gasoline that spilled. Soil became involved as the gasoline flowed into the roadside ditch. The groundwater has become involved due to the gasoline soaking into the ground. Finally, surface water has become involved due to the gasoline reaching the small stream that flows through the area.

5. Yes, these two groups face an increased threat from the gasoline fumes. Hazardous chemicals usually have a-greater effect on young children and the elderly, who may show signs and symptoms of toxic exposure at a lower level of exposure than other segments of the population.

## Unit 2: Suggested Answers

1. Among those who would be appropriate to invite are the following: the Local Emergency Planning Committee, the Mayor's office, the State Department of Natural Resources, company representatives and union officials from the meat packing plant, PTA leaders, the city attorney, fire inspection officials, and the emergency program manager.

2. Prior to the meeting, you would want to request information on plant emissions from your State Emergency Response Commission and Local Emergency Planning Committee, and request other general information on plant conditions from the local fire department and the plant safety officer. In addition, you might want to research applicable standards for ammonia emissions. (The Title Ill "hotline" could be of some assistance.)

3. Laws that could be violated include the Clean Air Act, the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation and Recovery Act (RCRA), and State environmental statutes.

4. Some possible actions—but by no means ***all*** of the actions that could be taken—include the following:

## Unit 2: Suggested Answers (continued)

The county air quality office is asked to take measurements of air pollutants in the area and determine if the there are violations of the Clean Air Act. The Local Emergency Planning Committee is asked to provide copies of the information collected under the Superfund Amendments and Reauthorization Act, and will determine if the facility is in full compliance with SARA. State natural resource officials, along with representatives of the Coast Guard and EPA, are asked to investigate the fish kills in the river and determine if there are any violations of the Clean Water Act, RCRA and State environmental statutes. Union officials agree to ask OSHA to inspect the plant for compliance with health and safety standards. And the fire inspector agrees to check the plant for fire code violations.

All of these actions are, to a great extent, made possible by citizen interest and involvement.

## Unit 3: Suggested Answers

1. During ***production***, a hazard could exist at Chemex Industries (located on Route 107).

2. During ***transportation***, a hazard might be found on any of the roadways, at the airport, along the Pacific Railroad, and along the Petrolux Pipeline. A special hazard may exist along the Petrolux Pipeline where it crosses the Allen Marshlands.

3. During ***storage,*** possible hazards could be found at the gas station, at Miller's Warehouse, and at Chemex Industries.

4. During ***use***, hazards could exist at Chemex Industries, the high school and elementary school, the nursing home, and at the Central City Airport.

5. During ***disposal,*** the Hidden Mounds Landfill could contain a hazard as the result of improperly discarded materials.

## Unit 4: Suggested Answers

1. Yes, good planning would have prevented many of the problems that occurred in the incident. A good emergency plan would have outlined who had the authority to order an evacuation, and who was to be in charge at the incident scene. Also, the plan should have identified the hazards associated with the hardware store's stocking of pesticides and fireworks.

2. Yes, good emergency planning must be coordinated with other communities and jurisdictions. Incidents can occur on political boundaries and involve more than one jurisdiction. Coordination between the two jurisdictions must be undertaken to provide protection to the residents in each community. Also, mutual aid (the sharing of services and equipment between communities) can be of great value in times of major emergencies.

3. Emergency planning should not be limited to governmental agencies. Other potential participants, such as private disaster relief organizations, schools, and churches, can be key players in a total community emergency plan. In the incident mentioned above, the Red Cross and Salvation Army, as well as the owner of the hardware store, should have been involved with the community planning process.

## Unit 5: Suggested Answers

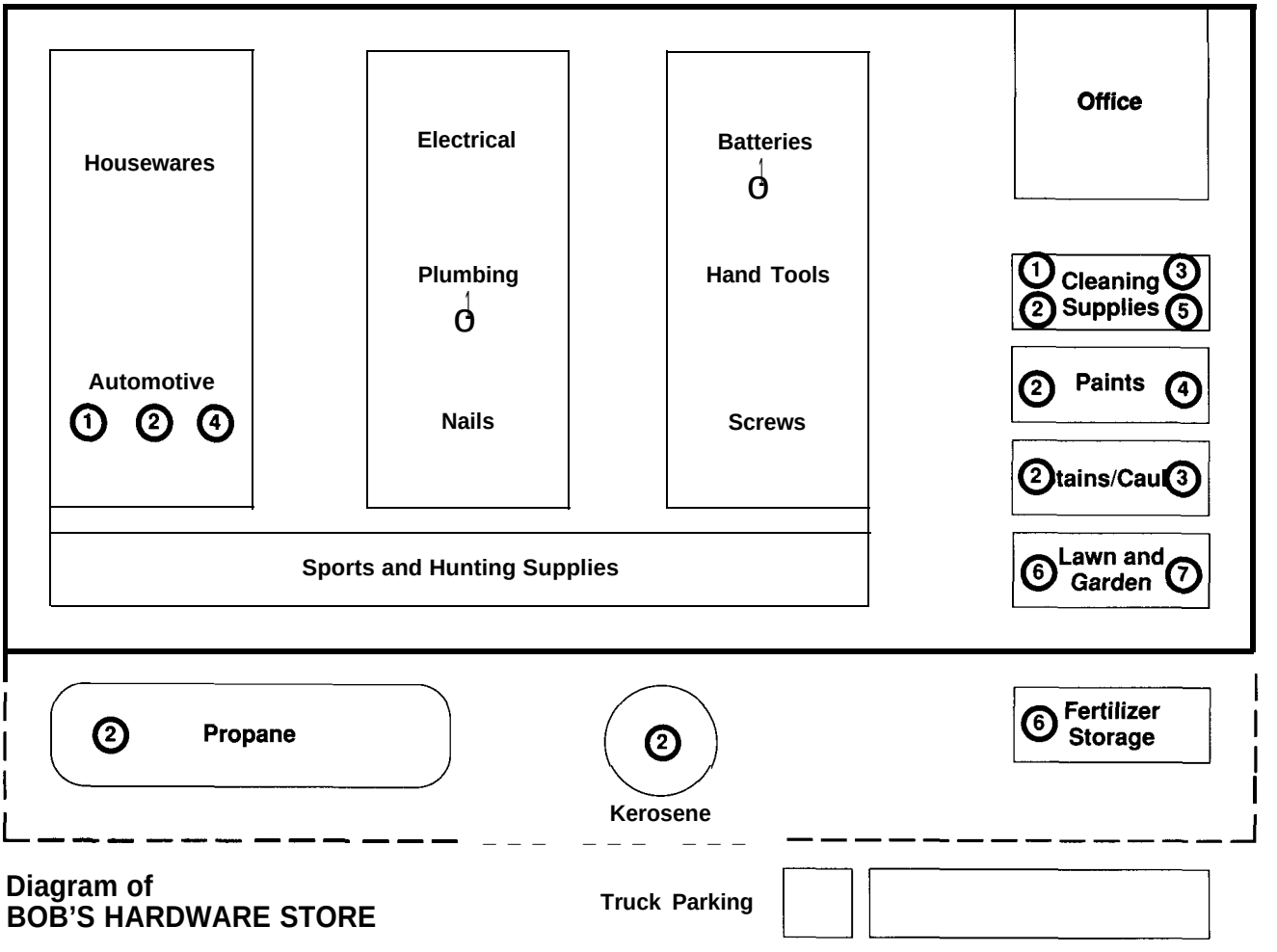


**Diagram of**
**BOB'S HARDWARE STORE**

If a bottle of caustic drain cleaner fell from a shelf and splashed your leg, you should try to wash the caustic off of the skin with running water for at least 15 minutes. Additional first aid information could be obtained from your family doctor, the local Poison Control Center, or the hospital emergency department.

# ANSWERS TO PRETEST AND CHECK YOUR MEMORY

## PRETEST

1. b (See Unit 1, pages 1-14 to 1-16)
2. d (See Unit 1, pages 1-4 to 1-6)
3. d (See Unit 1, page 1-8)
4. c (See Unit 1, page 1-9)
5. e (See Unit 1, page 1 -8)

6. d (See Unit 2, page 2-7)
7. a (See Unit 2, page 2-5)
8. c (See Unit 2, pages 2-5 to 2-6)
9. b (See Unit 2, page 2-6)
10. c (See Unit 2, page 2-7)

11. e (See Unit 3, page 3-9)
12. e (See Unit 3, page 3-5)
13. a (See Unit 3, page 3-9)
14. c (See Unit 3, page 3-1)
15. b (See Unit 3, page 3-9)

16. b (See Unit 4, page 4-6)
17. c (See Unit 4, page 4-11)
18. a (See Unit 4, page 4-6)
19. d (See Unit 4, page 4-11)
20. a (See Unit 4, page 4-11)

21. c (See Unit 5, page 5-2)
22. c (See Unit 5, pages 5-4 and 5-6)
23. a (See Unit 5, page 5-13)
24. d (See Unit 5, page 5-6)
25. a (See Unit 5, page 5-9)

## CHECK YOUR MEMORY

### Unit 1:

1. a (See pages 1-4 to 1-5)
2. d (See pages 1-15 to 1-16)
3. a (See page 1 -18)
4. b (See page 1-9)
5. a (See page 1-9)
6. c (See page 1-1 O)
7. b (See page 1-1 5)

### Unit 2:

1. a (See page 2-1 )
2. c (See page 2-3)
3. c (See page 2-8)
4. c (See pages 2-9 to 2-1 O)
5. d (See page 2-1 2)
6. a (See page 2-13)
7. c (See pages 2-5 to 2-6)

### Unit 3:

1. c (See page 3-2)
2. d (See pages 3-3 to 3-7)
3. b (See page 3-7)
4. b (See pages 3-7 to 3-8)
5. c (See page 3-8)
6. c (See page 3-8)
7. d (See page 3-1 1)

### Unit 4:

1. d (See page 4-5)
2. a (See page 4-1 )
3. a (See page 4-6)
4. d (See page 4-1 2)
5. a (See pages 4-14 to 4-1 5)
6. a (See pages 4-2 to 4-3)
7. b (See pages 4-16 to 4-1 7)

### Unit 5:

1. d (See page 5-3)
2. a (See page 5-4)
3. c (See pages 5-4 and 5-6)
4. a (See page 5-6)
5. c (See page 5-9)
6. c (See page 5-1 3)
7. d (See pages 5-13 to 5-1 4)